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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,875	09/28/2001	Randall Olsen		3646

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EXAMINER

PEREZ GUTIERREZ, RAFAEL

ART UNIT	PAPER NUMBER
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2686

DATE MAILED: 04/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary**Application No.**

09/965,875

Applicant(s)

Olsen et al.

Examiner

Rafael Perez-Gutierrez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 23-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This Action is in response to Applicant's response to restriction requirement filed on October 14, 2004. **Claims 1-28** are still pending in the present application. **This Action is made NON-FINAL.**

Election/Restrictions

2. Applicant's election without traverse of **Group I, claims 1-22** in the reply filed on October 14, 2004 is acknowledged.

Priority

3. Applicant has complied with the conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120.

Drawings

4. **Figures 1 and 2** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

5. The drawings are objected to because of the following minor informalities:

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a) On **figure 4**, the arrows pointing towards the “POWER AMP” should be pointed outwards because the signals are being transmitted rather than received; and

b) On **figure 8**, one of the occurrences of reference number **2R** should be deleted.

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference numbers not mentioned in the description:

a) On **figure 8**, reference number **9R** is not mentioned in the description; and

b) On **figure 19**, reference number **156** is not mentioned in the description.

7. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference numbers mentioned in the description on **page 10 lines 5 and 27**, on **page 11 lines 5 and 26**, and on **page 30 lines 4 and 5**:

a) Reference number **320** is not shown on **figure 18A**;

b) Reference number **395** is not shown on **figure 18B**;

c) Reference number **140** is not shown on **figure 17B**;

d) Reference number **400** is not shown on **figure 19**; and

e) Reference numbers **70, 76, and 79** are not shown in any **figure**.

8. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office Action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

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even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended”. If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the Examiner, the Applicant will be notified and informed of any required corrective action in the next Office Action. If a response to the present Office Action fails to include proper drawing corrections, corrected drawings or arguments therefor, the response can be held **NON-RESPONSIVE** and/or the application could be **ABANDONED** since the objections/corrections to the drawings are no longer held in abeyance.

Specification

9. The disclosure is objected to because of the following informality: In order to provide the most current priority information, the Examiner suggests the Applicant to replace the first paragraph on page 1 with the following paragraph:

--This application is a continuation-in-part application of Application Serial No.

09/847,629 filed May 2, 2001, now U.S. Patent No. 6,556,836 B2; Application Serial No.

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09/872,542 filed June 2, 2001, now abandoned; Application Serial No. 09/872,621 filed June 2, 2001, now abandoned; Application Serial No. 09/882,482 filed June 14, 2001, now U.S. Patent No. 6,665,546 B2; and Application Serial No. 09/952,591 filed September 14, 2001, now U.S. Patent No. 6,714,800 B2; all of which are incorporated herein by reference.

The present invention relates to multiple beam antennas and specifically to such antenna used in communication systems.--

Appropriate correction is required.

10. The disclosure is objected to because of the following informalities:

- a) On **page 1 line 13**, insert --and-- after “million subscribers”;
- b) On **page 1 line 22**, insert --. after “GHz)”;
- c) On **page 8 line 15**, replace “and 11B” with --, 11B1, and 11B2--;
- d) On **page 8 line 17**, replace “and 12B” with --, 12B1, and 12B2--;
- e) On **page 8 line 27**, replace “17 B” with --17B--;
- f) On **page 8 line 28**, replace “18 B” with --18B--;
- g) On **page 9 line 3**, replace “B and C” with --21B, and 21C--;
- h) On **page 9 line 6**, replace “B and C” with --23B, and 23C--;
- i) On **page 9 line 13**, replace “FIG. 17” with --FIGS. 17A and 17B--;
- j) On **page 10 line 13**, on **page 13 line 15**, on **page 14 line 5**, on **page 15 line 3**, replace “i.e.” with --i.e.,--;
- k) On **page 10 line 27**, replace “3b” with --18B-- after “Fig.”;

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- l) On **page 11 line 7**, replace “Fig. 19” with --Figs. 17A and 17B--;
- m) On **page 12 line 19**, replace “FIG. 21A, B, and C” with --FIGS. 21A, 21B, and 21C--;
- n) On **page 13 line 11**, replace “FIG. 23A, B, and C” with --FIGS. 23A, 23B, and 23C--;
- o) On **page 15 line 18**, replace “5.15 MHz”, “5.35 MHz”, and “5.725 MHz” with --5.15 GHz--, --5.35 GHz--, and --5.725 GHz--, respectively;
- p) On **page 15 line 19**, replace “5.825 MHz” with --5.825 GHz--;
- q) On **page 15 line 23**, replace “5 GHZ” with --5 GHz--;
- r) On **page 16 line 6**, replace “avoidance” with --avoidance).-- after “collision”;
- s) On **page 16 line 16**, replace “12beams” with --12 beams--;
- t) On **page 16 line 21**, on **page 17 line 11**, on **page 28 line 27**, on **page 29 line 20**, on **page 31 line 1**, replace “e.g.” with --e.g.,--;
- u) On **page 17 line 10**, replace “redirected electrically” with --redirected, electrically--;
- v) On **page 19 line 12**, replace “FIG.4” with --FIG. 4--;
- w) On **page 21 line 22**, replace “FIGS. 1 to 4” with --FIGS. 7 to 9--;
- x) On **page 22 line 13**, replace “1” with --15R--;
- y) On **page 22 line 22**, replace “7” with --7R--;
- z) On **page 22 lines 22 and 24**, replace “6” with --6R--;
- aa) On **page 22 line 26**, replace “3” with --3R--;
- bb) On **page 24 line 26**, replace “Q” with --“Q”--;
- cc) On **page 24 line 30**, replace “media” with --media.--;
- dd) On **page 29 line 11**, replace ““pipe,”” with --“pipe”,--;

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ee) On **page 31 line 29**, insert --(FIG. 6) after “station.”--;

ff) On **page 32 line 6**, replace “71.0-76” and “81.0 to 86” with --71-76-- and --81-86--, respectively; and

gg) On **line 6 of the abstract**, replace “5 degree” with --5 degrees--.

Appropriate correction is required.

Claim Objections

11. **Claims 1, 3, 4, 7-10, 15, and 20-22** are objected to because of the following informalities:

a) On **line 7 of claim 1**, replace “user” with --user’s-- before “transceivers” and “transceiver”;

b) On **line 14 of claim 1**, delete “very” before “large”;

c) On **lines 2 of claim 3**, replace “antenna” with --antennas-- after “multi-beam”;

d) On **line 1 of claim 4**, replace “user” with --user’s-- before “transceivers”;

e) On **line 4 of claim 7**, insert --,-- after “cellular base stations,”;

f) On **line 7 of claim 7**, delete “1)”;

g) On **line 12 of claim 7**, replace “.” with --; and-- after “phone frequency”;

h) On **line 3 of claim 8**, replace “said first transceiver” with --, each of said transceivers-- after “weather”;

i) On **line 1 of claims 9, 15, and 20-22**, replace “are” with --is-- after “transceivers”; and

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j) On **line 1 of claim 10**, replace “7” with --8-- after “Claim” in order to provide proper antecedent basis for “first and second sites”;

k) On **line 1 of claim 10**, delete “and” before “further”;

l) On **line 1 of claim 10**, replace “back-up” with --backup-- before “transceiver” in order to provide consistency with the recitation of “backup” in claims 11-14;

m) On **lines 1 and 2 of claim 10**, replace “configured” with --and configured to-- before “continue”;

n) On **line 1 of claim 15**, replace “both” with --each of-- before “said”;

o) On **line 1 of claim 20**, insert --each of-- before “said”;

p) On **line 3 of claim 20**, delete “of both systems” before “are”; and

q) On **line 3 of claim 20**, replace “beam” with --beams-- before “having”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

12. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the Applicant regards as his invention.

Claims 7-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claim 7 recites the limitation “said cell phone radio frequency” in **line 10**. There is

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insufficient antecedent basis for this limitation in the claim. Previous reference to a cell phone radio frequency was not found in either **claim 1 or 7**.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness

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or nonobviousness.

14. **Claims 1-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Reudink et al. (U.S. Patent Application Publication # 2004/0235527 A1)** in view of **Foster, Jr. et al. (U.S. Patent # 6,016,313)**.

Consider **claims 1-4**, Reudink et al. clearly show and disclose a multi-beam cellular communication system for providing last-mile communication to a large number of users in a communication cell (abstract and figures 1-4 and 8) comprising:

a plurality of multi-beam radio transceivers (base stations (BSs) radios) (figures 2A-2D), each transceiver comprising at least one multi-beam antenna 211-222 comprising a pair of multi-beam antennas configured to transmit/receive a plurality of narrow beam radio beams (reads on claim 2) (figures 1-4 and 8 and paragraphs 0014 and 0053-0065), each beam transmitting information to a plurality of some of said large number of users (remote stations) (abstract and paragraphs 0014 and 0053-0065),

a large number of users transceivers (remote stations radios), each user transceiver comprising at least one transceiver comprising at least one narrow beam antenna directed toward one of said plurality of multi-beam radio transceivers and configured to transmit a narrow beam radio beam (abstract and paragraphs 0015 and 0053-0065), and

a trunk line means (not shown but inherent since in all cellular systems, the BSs are connected to a mobile switching center (MSC) through a base station controller (BSC) via trunk lines) for providing communication between each of said multi-beam radio transceivers and a

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telephone central switching office (e.g., the MSC) (figures 2A-2D),

wherein narrow beam width communication is provided between said plurality of multi-beam transceivers and said large number of users permitting an available radio bandwidth to be utilized many times in said communication cell (paragraphs 0011-0029 and 0053-0065).

However, Reudink et al. do not specifically disclose that each beam has a divergence of less than 10 degrees (i.e., about 5 degrees) (claims 3 and 4)

In the same field of endeavor, Foster, Jr. et al. show and disclose a point-to-point millimeter wave communication system (figure 1 and column 5 lines 31-35) comprising:

a node 150, 151, or 152 (multi-beam radio transceiver) (figures 1 and 4) capable of transmitting and receiving information using a dish antenna 420 (figure 4) producing a communication lobe (beam) having a beam width (half-power beam width) of approximately 2 degrees or less (i.e., having a divergence of about 5 degrees (less than 10 degrees)) (column 15 lines 13-23); and

a node 150, 151, or 152 (user's transceiver) (figures 1 and 4) capable of receiving and transmitting information using a dish antenna 420 (figure 4) producing a communication lobe (beam) having a beam width (half-power beam width) of approximately 2 degrees or less (i.e., having a divergence of about 5 degrees (less than 10 degrees)) (column 15 lines 13-23).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a beam having a divergence of about 5 degrees as taught by Foster, Jr. et al. in the system taught by Reudink et al. for the purpose of serving a large number of users.

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Consider **claims 5 and 6**, and **as applied to claim 1 above**, Reudink et al., as modified by Foster, Jr et al., further disclose that a first portion of said plurality of multi-beam radio transceivers is arranged in groups of 6 to produce a first set of beams to provide a full 360 degrees of angular coverage and a second portion of said plurality of multi-beam radio transceivers are arranged in a second group of 6 to produce a second set of beams crossing said first set of beams (figures 1, 3A-3C, 4, 7A, and 8, and paragraphs 0014 and 0057).

Allowable Subject Matter

15. **Claims 7-22** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office Action, to include all of the limitations of the base claim and any intervening claims, and to include any corrections to the objections made above.

Conclusion

16. Any response to this Office Action should be **faxed to (703) 872-9306 or mailed to:**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

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Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

17. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Rafael Perez-Gutierrez whose telephone number is (571) 272-7915. The Examiner can normally be reached on Monday-Thursday from 6:30am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.


Rafael Perez-Gutierrez

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R.P.G./rpg **RAFAEL PEREZ-GUTIERREZ**
PATENT EXAMINER

April 16, 2005